

CLAIMS

What is claimed is:

1. A fluid connector, comprising:

a fluid conveying member that includes an interior fluid passageway; and

a fitting that includes a first fluid duct and a second fluid duct in communication with the first fluid duct, the fluid conveying member sized for receipt in the first fluid duct and including an opening defined by a collar that extends into the second fluid duct to provide the interior fluid passageway of the fluid conveying member in communication with the second fluid duct, the collar configured to inhibit movement of the fitting on the fluid conveying member.

2. The fluid connector of claim 1, wherein the fitting includes at least one annular sealing member positioned between the fitting and the fluid conveying member both upstream and downstream of the second fluid duct.

3. The fluid connector of claim 1, wherein the fitting includes a pair of annular sealing members positioned between the fitting and the fluid conveying member both upstream and downstream of the second fluid duct.

4. The fluid connector of claim 1, wherein the collar is a deformed portion of a wall of the fluid conveying member.

5. A fluid connector, comprising:

a fluid conveying member that includes an interior fluid passageway; and

a fitting that includes a first fluid duct and a second fluid duct in communication with the first fluid duct, the fluid conveying member sized for receipt in the first fluid duct and including an opening defined by a bushing that secures the fitting to the fluid conveying member and provides the interior fluid passageway of the fluid conveying member in communication with the second fluid duct.

6. The fluid connector of claim 5, wherein the bushing is a thermal formed bushing.
7. The fluid connector of claim 5, wherein the bushing is a leak resistant joint.
8. The fluid connector of claim 5, wherein the bushing includes material from the fitting and the fluid conveying member.
9. The fluid connector of claim 5, wherein the fitting includes at least one annular sealing member positioned between the fitting and the fluid conveying member both upstream and downstream of the second fluid duct.
10. A fluid connector, comprising:
 - a fluid conveying member that includes an interior fluid passageway; and
 - a fitting that includes a first fluid duct and a second fluid duct in communication with the first fluid duct, the fluid conveying member sized for receipt in the first fluid duct and including an opening defined by a retaining formation that secures the fitting to the fluid conveying member and provides the interior fluid passageway of the fluid conveying member in communication with the second fluid duct, and at least one annular sealing member positioned between the fitting and the fluid conveying member both upstream and downstream of the second fluid duct.
11. The fluid connector of claim 10, wherein the retaining formation is one of a collar and a bushing.
12. The fluid connector of claim 11, wherein the bushing is a thermal formed bushing.
13. The fluid connector of claim 11, wherein the bushing is a leak resistant joint.
14. A method of assembling a fluid connector, comprising:
 - providing a fluid conveying member having an interior fluid passageway and a fitting that includes a first fluid duct and a second fluid duct in communication with the first fluid duct;

providing a tool for creating an opening in the fluid conveying member to provide the interior fluid passageway of the fluid conveying member in communication with the second fluid duct;

inserting the fluid conveying member into the first fluid duct of the fitting;

creating a pilot hole in the fluid conveying member by extending the tool through the second fluid duct and drilling into the fluid conveying member;

extending at least one forming member from the tool; and

creating the opening by removing the tool and deforming a portion of the fluid conveying member adjacent the pilot hole to create the opening.

15. The method of claim 14, wherein the step of creating the pilot hole and forming the collar is performed while rotating the tool.

16. The method of claim 14 further including the step of positioning at least one annular sealing member between the fitting and the fluid conveying member both upstream and downstream of the second fluid duct.

17. A method of assembling a fluid connector, comprising:

providing a fluid conveying member having an interior fluid passageway and a fitting that includes a first fluid duct and a second fluid duct;

providing a thermal forming tool for creating an opening in the fluid conveying member to provide the interior fluid passageway of the fluid conveying member in communication with the second fluid duct;

inserting the fluid conveying member into the first fluid duct of the fitting; and

creating the opening in the fluid conveying member by heating the fluid conveying member with the thermal forming tool, penetrating the fluid conveying member with the thermal forming tool, and displacing a portion of the fluid conveying member to prevent removal of the fluid conveying member from the fitting.

18. The method of claim 17, wherein the creating step is further defined by frictionally heating the fluid conveying member with the thermal forming tool.

19. The method of claim 17, wherein the second fluid duct is separated from the first fluid duct by a wall member and the creating step is further defined by heating the wall member and the fluid conveying member with the thermal forming tool, penetrating the wall member and the fluid conveying member with the thermal forming tool, and displacing a portion of the wall member and the fluid conveying member to prevent removal of the fluid conveying member from the fitting.

20. The method of claim 19, wherein displacing a portion of the wall member and the fluid conveying member includes displacing a portion of the member and the fluid conveying member to form a bushing.

21. The method of claim 19, wherein the creating step is further defined by frictionally heating the wall member and the fluid conveying member with the thermal forming tool.

22. The method of claim 19, wherein the creating step is further defined by joining the displaced portion of the wall member and the fluid conveying member to create a fluid-tight seal.

23. The method of claim 19, wherein the creating step is further defined by rotating the thermal forming tool while heating and penetrating the wall member and the fluid conveying member.

24. The method of claim 17 further including the step of positioning at least one annular sealing member between the fitting and the fluid conveying member both upstream and downstream of the second fluid duct.

25. A method of assembling a fluid connector, comprising:

providing a fluid conveying member having an interior fluid passageway and a fitting that includes a first fluid duct and a second fluid duct in communication with the first fluid duct;

providing a tool for creating an opening in the fluid conveying member to provide the interior fluid passageway of the fluid conveying member in communication with the second fluid duct;

inserting the fluid conveying member into the first fluid duct of the fitting;

extending the tool through the second fluid duct and into the fluid conveying member;
and

deforming the fluid conveying member using the tool to create the opening and to secure the fitting to the fluid conveying member.

26. The method of claim 25, wherein the deforming step includes creating a pilot hole in the fluid conveying member by extending the tool through the second fluid duct and into the fluid conveying member, extending at least one forming member from the tool, and removing the tool and deforming a portion of the fluid conveying member adjacent the pilot hole.

27. The method of claim 25, wherein the deforming step includes heating the fluid conveying member with the tool, penetrating the fluid conveying member with the tool, and displacing a portion of the fluid conveying member adjacent the opening to prevent removal of the fluid conveying member from the fitting.

28. The method of claim 25, wherein the second fluid duct is separated from the first fluid duct by a wall member and the deforming step is further defined by heating the wall member and the fluid conveying member with the tool, penetrating the wall member and the fluid conveying member with the tool, and displacing a portion of the wall member and the fluid conveying member to prevent removal of the fluid conveying member from the fitting.